

1           Android was introduced for phones,  
2     right, and that was the primary reason for Google to  
3     develop and build Android, and when that happened,  
4     Oracle very rapidly started losing market share in  
5     the phone market as a whole.

6           So Oracle did have successful business  
7     in other markets, such as, you know, all the  
8     multi-dashboards devices and Kindle devices, and so  
9     on and so forth.

10          Now, what happened was because Android  
11     started becoming accepted as an ecosystem of its own,  
12     related to but not exactly overlapping Java, we  
13     started running into situations where customers said,  
14     "Well, you know, you're selling me Java  
15     compatibility, I want Android compatibility because  
16     that is what I'm used to these days."

17          So this rift between Java and Android,  
18     which was similar to but not identical to the Java  
19     APIs, started by making Oracle lose the phone market,  
20     but over time the fact that Google pursued and agreed  
21     with us a related but separate ecosystem from Java,  
22     meant that we started having customers that said, you  
23     know, "Your Java APIs are not worth much anymore  
24     because I want to use the Android APIs."

25          And that I have seen a number of times.

1           This was the core reason why we  
2     choose -- why we were forced to focus on a small  
3     segment of the Internet of Things and embedded market  
4     rather than focusing on the broader market. We  
5     simply weren't able to compete.

6           Q       How does the Android APIs affect the  
7     worth or value of the Java APIs, if at all?

8           A       So the fact that there is a related but  
9     separate set of APIs, and with that comes a separate  
10    set of tools and skills and content produced for that  
11    API, and that content produced for that API cannot  
12    immediately run on the Java platform, means if you  
13    built up -- your organizations built up value around  
14    the Android platform, and Android APIs, or if you  
15    rely on the third-party content providers to provide  
16    value around such a platform, you cannot adopt and  
17    use Java SE, you're prevented from doing that because  
18    you'd have to port all the software over to the, you  
19    know, compliant -- specification compliant Java SE  
20    platform. You basically create a moat, if you will.

21          Q       Do you believe that it would have been  
22    better for Oracle if Android had used all of the Java  
23    APIs?

24          A       Oh, without a doubt.

25          Q       Okay.

1 Have you ever done any analysis of  
2 Android?

3 A Could you clarify?

4 Q Yeah.

5 Have you ever, like, done any technical  
6 analysis of, say, the source code for Android?

7 A I never looked at the source code for  
8 Android.

9 Q Okay.

10 What is the basis for your opinion that  
11 Android is similar to Java?

12 A I looked at the documentation for the  
13 Android APIs.

14 Q Any other basis?

15 A You know, frequent conversations with  
16 members of the community.

17 MR. MULLEN: Let's mark one exhibit as  
18 1586.

19 (Whereupon February 7, 2012 JAVA ME  
20 Strategy Proposal is received and marked as Exhibit  
21 1586 for identification.)

22 Q Take a look at Exhibit 1586, Mr. Stahl.

23 A Give me a few minutes.

24 Q Sure.

25 (Witness reviews document.)

1 typically around technology questions.

2 I know that our salespeople brought this  
3 up again and again. I don't have any specific  
4 examples, off the top of my head, no.

5 Q Okay.

6 So as you sit here today, you can't  
7 recall any product other than the Kindle for which  
8 Android has replaced Java?

9 MS. SIMPSON: Same objection.

10 A I believe it happened with the  
11 BlackBerry, but I actually -- I can't say for sure,  
12 and I don't have any other product names, off the top  
13 of my head.

14 Q Okay.

15 A To clarify.

16 I have not gone back and checked any of  
17 my notes; if I did, I'm sure I would be able to come  
18 up with examples, but I suspect you already have them  
19 from other witnesses.

20 Oh, I do have one, [REDACTED] smart TV,  
21 chips for the smart TV market.

22 Q And did [REDACTED] used to use Java for  
23 smart TVs?

24 A They used Java for set-top boxes, and I  
25 think they still use Java, or it's being used

1 together with [REDACTED] at least in Brazil in the  
2 [REDACTED] which is a part of the smart TV  
3 market, if would.

4 Q So has [REDACTED] -- strike that.  
5 Has Oracle lost a [REDACTED] deal to  
6 Android?

7 A Most likely.  
8 I can't recall the details of all such  
9 deals, but, again, I wouldn't be involved in  
10 discussions at that level. I know we discussed Java  
11 with [REDACTED] and I know that they were vested in  
12 Android as a smart TV platform.

13 Q Other than what you've testified to  
14 today, is there any basis for your opinion that  
15 competition with Android has harmed and continues to  
16 harm other markets for Java?

17 A So, yes.

18 As I said, I had numerous conversations  
19 with salespeople over the years where, you know,  
20 they've complained that they have an account they  
21 can't sell Java because Android is there.

22 I cannot give you any exact examples.

23 I have been to numerous trade shows over  
24 the years where I have met with, you know, potential  
25 customers, I can't name any specific examples, but

1     there was one I do recall which was a company that  
2     produced vending machines, and they said they  
3     considered Java but chose to go with Android.

4             And so I don't have an analysis, I don't  
5     have specific names, but I can say truthfully that  
6     there probably have been hundreds of conversations  
7     over the years where Android was mentioned and -- and  
8     where it was mentioned as an alternative that was  
9     selected instead of looking at Java.

10            Q       And in any of those deals, are you aware  
11     of a customer actually choosing Android instead of  
12     Java?

13            A       I think in most of them, customers chose  
14     Android instead of Java.

15            Q       Okay.

16                    And what are -- what companies can you  
17     recall doing that?

18            A       As I just said, I don't have any  
19     specific names.

20                    MR. MULLEN: All right, let's take a  
21     quick break.

22                    THE VIDEOGRAPHER: Off the record,  
23     12:28 p.m.

24                    (Brief recess taken.)

25                    THE VIDEOGRAPHER: Back on the record,

1 12:35 p.m.

2 A I'm sorry, I have to ask a question. I  
3 was a bit confused.

4 The last line of questioning, I'm not  
5 sure that your understanding of the word "product" is  
6 the same as mine, so I may have been overly  
7 unspecific in my response.

8 Q What do you understand the word  
9 "product" to mean?

10 A So, I'm product manager. When I say  
11 "product," I mean a specific line item in our price  
12 list.

13 So it's like a specific car model would  
14 be a product, a very, very specific car model. Which  
15 is why I have to respond, I don't know many specific  
16 products.

17 Does that make sense?

18 Q Does the definition you just gave change  
19 your prior testimony in any way?

20 A That's what I'm confused about. When  
21 you say "product," what exactly do you mean?

22 Q Unfortunately, I have to be the one  
23 asking the questions.

24 A Okay.

25 So, for instance, in the back of this,

1       there is a list of customers, right?

2                       If you look at printers -- it's okay for  
3       me to refer to this?

4               Q       Well, actually, what I would prefer to  
5       do is I just have a few more questions before we're  
6       done on the record, and if your lawyer has any  
7       follow-up, she can ask, but my questions are, other  
8       than the markets we've discussed today, are you aware  
9       of any other potential market for Java that is being  
10      harmed by Android, in your opinion?

11              A       So that's -- that's a very broad  
12      statement.

13                     I would say any market where functions  
14      of a specific device is produced, an embedded device,  
15      if you will, be it consumer or non-consumer device,  
16      which has a screen, pretty much in every such market  
17      we've had an issue marketing Java against Android.  
18      When it's been a device that has not had a screen, we  
19      have not run into Android much.

20              Q       So are you aware of any market currently  
21      that you believe is a potential market other than the  
22      markets we've discussed today?

23              A       That is an extremely broad statement.

24                     If we look at Internet of Things as a  
25      product, and this is an area where I'm currently



1 working, although my current responsibilities are  
2 Cloud service and not device side technology stack,  
3 if you look into, for instance, the retail segment,  
4 you have point of sale devices, sometimes they're  
5 tablets or PCs, sometimes they're something more  
6 specific.

7 Those, we see a lot of Android in. And  
8 historically we had Java business in that area. I  
9 don't think we have much anymore.

10 Whereas in the retail space, if you look  
11 at monitoring devices that checks the temperature of  
12 the fridge or something to that extent, that would be  
13 a sensor platform that would not be running Android,  
14 which would be a potential target for Java.

15 If you look in the industrial market,  
16 and you look at something like an industrial gateway  
17 that connects machines to a data collection service  
18 on the back end, that's headless, it doesn't have a  
19 screen, you don't see a lot of Android, target for  
20 Java for sure.

21 But if it's a human interface device,  
22 like a touchscreen-based thing that's used to  
23 interact with a machine, we see a lot of Android, and  
24 it's very hard to sell Java into that market.

25 I can go on.

1           Q       Have you made any effort to quantify the  
2       harm that Oracle has allegedly suffered due to  
3       Android?

4           A       No.

5           Q       Are you aware of any effort internally  
6       at Oracle to do that?

7           A       I am not.

8                   I'd like to say that at the time I  
9       started having responsibility for this part of the  
10      Java business, so 2012, the extension of Android was  
11      almost like a black -- sorry -- wet blanket, I think  
12      you say in English, over the market. Like, basically  
13      anywhere where there was a screen or consumer-facing  
14      device was widely regarded as impossible to go into,  
15      and any salesperson that I discussed this with would  
16      say the same, so we intentionally choose not to  
17      pursue that market.

18          Q       Prior to 2012, do you have any knowledge  
19      of Oracle's -- any harm Oracle might have suffered  
20      due to Android?

21          A       If you had asked me prior to 2012, so  
22      it's now the year 2011, you're asking me the same  
23      question, I would only have been able to give you  
24      anecdotal information. I didn't have any direct  
25      insight into it.

1 just can't remember what the exact numbers were.

2 Q What about from then to now?

3 A I haven't followed this market recently  
4 because I'm not responsible for Java since 2014.

5 Q So you don't have any knowledge of the  
6 market for Java SE post-2014?

7 A I don't have any direct knowledge of our  
8 revenue figures; however, in my current  
9 responsibility, I frequently interact with vendors  
10 that produce or use embedded devices in various  
11 segments, and I know that there is a large amount of  
12 Android in that market and not that much Java.

13 MS. SIMPSON: I think we're beyond the  
14 time.

15 MR. MULLEN: Just a couple more  
16 questions and I'll be done. Just a few more.

17 Q Is it possible that the reason that the  
18 Java -- excuse me.

19 Is it possible that the reason Android  
20 has done better than Java in these markets is because  
21 Android is a superior technical solution to Java?

22 MS. SIMPSON: Objection to form.

23 A So I assume Java, you mean Java SE now,  
24 right?

25 Q Yes.

1           A           I don't think that is an accurate  
2           statement. I actually believe that if you take the  
3           combination of Linux with Java SE, you have something  
4           which is very similar to Android in the market.  
5           Sorry, technically very similar to Android.

6           Q           That combination doesn't currently  
7           exist, correct?

8           A           It exists, and it's frequently used in  
9           headless devices in the market, but it's rarely used  
10          in headful devices with a screen in the market. And  
11          those are typically the higher value devices.

12                   MR. MULLEN: No further questions.

13                   MS. SIMPSON: Okay.

14                   CROSS-EXAMINATION BY MS. SIMPSON:

15           Q           Mr. Henrik, I just wanted to clarify a  
16           little bit on what seems to be some confusion in the  
17           record on your view of what "product" means versus  
18           what Mr. Mullen's view may have meant.

19                   Do you recall the questions earlier  
20           concerning replacement of Java by Android in  
21           particular products?

22                   Do you recall that?

23           A           I recall the question, and again, my  
24           response was that in my experience, most of these --  
25           most of these products are design wins. And a design

1 win is something that happens very early in a product  
2 life cycle.

3 With product, I mean a specific model,  
4 like, you know, a specific model of a car or a  
5 specific model of a refrigerator or something like  
6 that. And typically within the life cycle of that  
7 model, you don't replace things like the software.  
8 You may replace hardware components because, you  
9 know, they may have a source like a chip from a  
10 vendor and they stop producing the chip so you have  
11 to replace it with something else, but typically you  
12 maintain the software stack during the lifetime of a  
13 particular product model.

14 If you use the word product in a broader  
15 sense, like cars or printers, now my answer might be  
16 different.

17 Q Can you -- if you do expand the question  
18 to include product lines or product categories, can  
19 you explain how your answer would be different?

20 MR. MULLEN: Object, form.

21 A Oh, this is fun, we turned the tables  
22 around.

23 So as I was going through this  
24 personally, and I looked at, you know, the list of  
25 printers here, the printer manufacturers, sorry, on

1 page two in Exhibit B, so I know these are all --

2 Q And that is Exhibit B, just to be clear,  
3 Exhibit B to, what is it, 1585, right?

4 A Yeah.

5 So I know that there are a number of  
6 printer manufacturers that we have licensed Java to  
7 over the years or -- or discussed licensing Java to  
8 over the years and -- is there another list? Because  
9 this doesn't seem to be complete. These are just  
10 examples, right?

11 Okay, right, not limited to.

12 So in the printer list we have [REDACTED]  
13 [REDACTED] I know for sure we licensed  
14 it to [REDACTED] for example, for multi-functional  
15 printers. They are a customer. And what I've seen  
16 is that the vendors, like [REDACTED] that focus more on  
17 the Enterprise space, they have, like, this really,  
18 really big machine that they license, they typically  
19 stayed with Oracle and they kept licensing Java and  
20 kept using Java and other components, whereas vendors  
21 that were more targeting their consumer segment,  
22 [REDACTED] is an example, lower end, they actually moved  
23 to Android.

24 So if by product, we mean, broadly  
25 speaking, printers as product, so, yes, I've seen

1 specific examples of lost business, but I can't name  
2 any specific models.

3 Q Are there other examples of lost  
4 business in product categories where Android replaced  
5 Java?

6 MR. MULLEN: Object to form.

7 THE WITNESS: I'm sorry.

8 MR. MULLEN: Object to form.

9 A TVs for sure. Cars. We haven't lost  
10 anything in Blu-ray. We certainly lost it in media  
11 players. I think in -- if you look at game consoles,  
12 I know we licensed Java to run the Blu-ray part, but  
13 I also -- this is anecdotal. I believe that there  
14 are game consoles, I think the recent Playstation, I  
15 think it supports Android API for producing content,  
16 and they certainly don't support Java for that, so  
17 that could be viewed as a lost deal. And the  
18 Internet of Things space, it's very, very broad. I  
19 could probably come up with examples.

20 Q And what about phones?

21 MR. MULLEN: Object, form.

22 A There aren't many phones today that run  
23 Java. There is not many modern high-end, mid-end  
24 phones that run Java. Some 85 percent, according to  
25 numbers quoted in press, run Android. You know, 2005

1 I think 85 percent would be Java. And, again, I  
2 think that's based on historic numbers quoted in  
3 press.

4 Q Is it your opinion that Android replaced  
5 Java in that percentage of phones?

6 MR. MULLEN: Object to form.

7 A Yeah.

8 MS. SIMPSON: No further questions.

9 REDIRECT EXAMINATION BY MR. MULLEN:

10 Q So I just have some follow-up questions  
11 on that.

12 So it's your opinion that every phone  
13 that Java lost, Android won?

14 A No, I don't think that's accurate.

15 What I think is accurate though, is if  
16 you look at the phone market as a whole, that market  
17 has grown over the years. There are more phones sold  
18 today than were phones sold in 2005, right?

19 So it's not one-to-one correspondence,  
20 but if you look at the market share of Java in the,  
21 you know, mid 2000s, I think it was around  
22 85 percent. And this is not firsthand knowledge,  
23 like I see numbers in the press. I think at its  
24 peak, it was around 85 percent. And I believe that  
25 the market share of Android phones, that might



1 actually be restricted to medium high-end phones, so  
2 maybe it's only what we could call sloppily  
3 smartphones, is around the same number.

4 I don't think there is a coincidence  
5 that those numbers are similar. I think that, in  
6 general, the phone market has a need for a, you know,  
7 a broadly available application programming platform,  
8 and that that need was fulfilled by Java in the  
9 mid-2000s, and that need is fulfilled by Android  
10 today.

11 Q Do you believe that Java's market share  
12 would have stayed the same were it not for the  
13 introduction of Android?

14 A I do.

15 I can't say I have any proof for that,  
16 but I do believe it would happen, yes.

17 Q You mentioned in televisions Java --  
18 excuse me -- Oracle has lost deals to Android.

19 What were you referring to?

20 A So, if you look at the mid 2000s, there  
21 were two or three, you know, ecosystems, if you will,  
22 or parts of the TV ecosystem that were based on  
23 industry specifications like DTV and Ginga-J, Ginga-J  
24 is still alive, but I don't know that DTV is much  
25 used anymore. They used Java, and there were a lot

1 of Java deployed in other types of TVs. If I look at  
2 a TV today, it's more likely not running Java, but  
3 some other platform. Android would be common.

4 Now, to be clear, I don't believe, and  
5 this -- I don't have any numbers, but I don't believe  
6 that the market share of Android in the TV space is  
7 anywhere near the dominance it has in the high medium  
8 end phone market because I think there are more TV  
9 manufacturers that choose to use other platforms than  
10 Android or Java.

11 Q But as you sit here today, can you name  
12 a specific television or manufacturer of televisions  
13 to which Oracle has actually lost a Java business to  
14 Android?

15 A So I know that Oracle had significant  
16 business with TV manufacturers that were leveraging  
17 [REDACTED] is a supplier into the TV  
18 market. They produce chips that are used to run TVs.  
19 And I know that [REDACTED] moved to recommend Android  
20 in many cases, which would then downstream be picked  
21 up by a large number of TV manufacturers.

22 I can't give you any specific names.

23 Q What about for automotive, can you name  
24 a single automotive manufacturer that used to use  
25 Java and replaced Java with Android?

1           A           I believe [REDACTED] did, and I know  
2           they're using Android today.

3           Q           Any others?

4           A           Not offhand.

5           Q           Do you have firsthand knowledge of  
6           whether [REDACTED] replaced Java with Android?

7           A           No.

8                       I talked to salespeople, but not to the  
9           customer directly on this topic.

10                      I know we discussed selling Java to them  
11           for running the entertainment system in the car and  
12           they choose not to use it. We do still sell Java to  
13           them, but not for the entertainment system.

14           Q           I think you also mentioned Blu-ray?

15           A           Yes.

16           Q           Can you name a Blu-ray customer to which  
17           Oracle has lost Java business because of Android?

18           A           I don't believe that there are any  
19           Blu-ray players running Android, I think all of them  
20           are using Java.

21                      MR. MULLEN: No further questions.

22                      MS. SIMPSON: Okay, all finished.

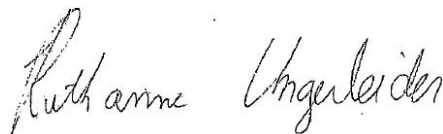
23                      Thank you.

24                      THE VIDEOGRAPHER: Off the record,  
25           12:53 p.m. This is the end of disk two and concludes

## C E R T I F I C A T E

I, RUTHANNE UNGERLEIDER, a Certified Court Reporter and Notary Public, certify that the foregoing is a true and accurate transcript of the stenographic notes of the deposition of said witness who was first duly sworn by me, on the date and place hereinbefore set forth.

I FURTHER CERTIFY that I am neither attorney, nor counsel for, nor related to or employed by, any of the parties to the action in which this deposition was taken, and further that I am not a relative or employee of any attorney or counsel in this case, nor am I financially interested in this case.



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